

## Westar Energy

### SmartStar Lawrence Project

#### Abstract

Westar Energy's SmartStar Lawrence project deploys advanced metering infrastructure (AMI), meter data management system (MDMS), and distribution automation equipment. AMI and MDMS systems are expected to reduce operating costs, improve reliability, and enhance customer services by improving enterprise systems, including billing, outage management, and load research. The AMI and MDMS also support a customer Web portal that provides energy usage and billing information for customers. Distribution automation assets include automated reclosers, capacitor automation equipment, and fault indicators to speed up restoration of service following outages and reduce energy losses through improved management of circuit voltages.

#### Smart Grid Features

**Communications infrastructure** includes meter communications networks based on radio frequency mesh (900 MHz) local area network and a dedicated backhaul communications network using a wireless carrier that is designed to be operated separately from Westar Energy's existing telephone and fiber optics network. This infrastructure provides Westar Energy with expanded capabilities to optimize energy delivery, system reliability, and customer services.

**Advanced metering infrastructure** includes 40,000 residential and 5,000 commercial smart meters. These meters contribute to reduced operational costs through the automation of meter readings and customer services activities. The new AMI system is complemented by MDMS, which enables Westar Energy to identify immediate and future opportunities to reduce customer electricity use and peak demand, as well as to improve operational efficiency. The project aims to integrate the AMI system with a new outage management system, which provides improved service reliability and reduced service restoration time for the customers.

**Advanced electricity service options** include access to a Web-based information portal for customers receiving new smart meters. This Web portal provides enrolled customers with the opportunity to view their electricity usage and costs and gain information on energy management and efficiency tips to help them better manage their consumption and bills.

#### At-A-Glance

Recipient: Westar Energy

State: Kansas

NERC Region: Southwest Power Pool

Total Budget: \$39,290,749

Federal Share: \$19,041,565

Project Type: Integrated and Crosscutting Systems

#### Equipment

- 45,000 Smart Meters
- AMI Communication Systems
  - Meter Communications Network
  - Backhaul Communications
- Meter Data Management System
- Customer Web Portal
- Distribution Automation Equipment for 15 out of 1,338 Circuits
  - Distribution Management System
  - SCADA Communications Network
  - Automated Distribution Circuit Switches
  - Automated Capacitors

#### Time-Based Rate Programs

- Time-of-Use Pricing
- Critical Peak Pricing
- Critical Peak Rebates
- Variable Peak Pricing

#### Key Targeted Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Electricity Costs for Customers
- Improved Electric Service Reliability and Power Quality
- Reduced Costs from Equipment Failures, Distribution Line Losses, and Theft
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

**Westar Energy** (continued)

**Time-based rate programs** include a pilot introduction of time-of-use rates, critical peak pricing, critical peak rebates, and variable peak pricing. These rate programs are intended to be limited in scope to explore how customers react to the new pricing structures.

**Distribution automation systems** include 31 automated circuit reclosers covering 15 circuits, six capacitor automation upgrade packages covering two circuits, and nine sensor devices covering two circuits. The distribution automation equipment helps to improve reliability and to reduce operations and maintenance costs.

**Distribution system energy efficiency improvements** involve integration of automated capacitors coupled with the power quality monitoring capabilities of the new smart meters. The capacitors improve voltage and volt ampere reactive control, power quality, and distribution capacity by reducing energy losses on the distribution system.

**Timeline**

Key Milestones	Target Dates
AMI and distribution automation asset deployments begin	Q1 2011
Initial deployment of beta test meters ends	Q1 2011
Customer access to Web portal available	Q3 2011
AMI and distribution automation asset deployments ends	Q4 2011
AMI integration with outage management system ends	Q3 2012

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